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REMARKS

This is intended as a full and complete response to the Office Action dated November 3, 2003, having a shortened statutory period for response set to expire on February 3, 2004. Please reconsider the claims pending in the application for reasons discussed below.

CLAIM REJECTIONS

A. 35 U.S.C. §112

Claims 53 and 58

Claims 53 and 58 stand rejected under 35 U.S.C. §112. Specifically, the Examiner asserts that there is no support in the specification for "a semiconductor processing chamber as claimed, wherein a passage is disposed between the liner and the chamber wall, the passage being fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a heat transfer medium therethrough", as recited by independent claim 53, from which claim 58 depends. In response, the Applicants have amended claim 53 to recite a passage disposed in "in at least one of the bottom or walls of the liner", replacing a passage disposed "between the liner and the chamber wall". This amendment is supported by, for example, page 7, lines 32-36 and page 10, lines 12-18 of the specification, and by FIG. 3, which describe a liner 104 having a fluid passage 322 formed in a portion thereof.

Thus, the Applicants respectfully submit that that claim 53, and claim 58 that depends therefrom, are supported by the specification. Accordingly, the Applicants respectfully request that the rejection to claims 53 and 58 be withdrawn.

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B. 35 U.S.C. §103(a) and 55 **Claims 11-17, 20, 38, 40, 47-48, 51, 53**

Pu et al. in view of Masuda et al.

1. Claims 11-17 and 20

Claims 11-17 and 20-24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over PCT Application No. WO 99/48130, published September 22, 1999 to *Pu et al.* (hereinafter referred to as "*Pu*") in view of United States Patent No. 6,171,438 issued January 9, 2001 to *Masuda et al.* (hereinafter referred to as "*Masuda*"). The Applicants respectfully disagree.

Pu and *Masuda* do not, individually or in combination, teach, show or suggest all of the limitations of independent claim 11, from which claims 12-17 and 20-24 depend. *Pu* teaches a plasma processing chamber having two separate liners: a first, solid anodized aluminum liner disposed adjacent a chamber wall, and a second, solid anodized aluminum liner disposed adjacent a substrate support. The first and second liner prevent reaction products from depositing on In addition, a lid of the chamber contains an array of induction coils that control the temperature of the lid to prevent deposition of reaction products thereon.

*Masuda teaches a plasma processing chamber having a hollow jacket held adjacent a sidewall for controlling the temperature of the side wall's inner surface so that polymerized material is drawn onto the jacket's surface to form a film. The jacket is coupled to a pipe or line 104 that extends from outside of the chamber and through the sidewall to supply a heat-exchanging medium into a hollow space in the jacket. It is unclear how or if the heat-exchanging medium can be evacuated from the hollow space in the jacket — *Masuda does not disclose a means for doing so.**

Furthermore, the jacket taught by *Masuda* is provided a heat exchanging medium by means of a pipe that extends through a sidewall of the chamber from an outside environment. Such a medium supply means is only effective for providing the medium to a jacket disposed against the sidewall. In order to

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similarly provide the heat exchanging medium to an inner liner wall that is disposed against a substrate support, the pipe would have to extend not only through the sidewall, but through a portion of the processing volume. Thus, the pipe could interfere with other chamber components and would be subjected to plasma and other processing materials that may corrode the pipe, leading to wear and/or failure of the liner system.

Thus, while *Pu* teaches a pair of removable liners that simply cover portions of a processing chamber to prevent deposition of reaction products on those portions, *Masuda* teaches a jacket adapted to be disposed adjacent a chamber wall for regulating the temperature of the wall. A fluid is provided to a hollow space in the jacket via a pipe that extends through the wall to outside the chamber body. There is no suggestion or motivation to combine *Pu* and *Masuda* in a manner that would teach, show or suggest a chamber liner disposed in a chamber volume and having a base substantially covering the bottom of the chamber body, the base having a substantially annular passage formed therein and fluidly isolated from the chamber volume, the base having an inlet and an outlet adapted to circulate a fluid through the passage, as recited by claim 11.

Thus, independent claim 11, and claims 12-17 and 20-24 that depend therefrom, are patentable over *Pu* in view of *Masuda*. Accordingly, the Applicants respectfully request that the rejection to claims 11-17 and 20 be withdrawn.

2. Claims 38 and 40

Claims 38 and 40 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda*. The Applicants respectfully disagree.

Pu and *Masuda* do not, individually or in combination, teach, show or suggest all of the limitations of independent claim 38, from which claim 40 depends. As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest, a liner including an outer cylindrical wall configured to line the sidewalls of the chamber, an inner cylindrical wall configured to line a substrate support disposed in the process

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volume of the chamber, a bottom coupled between the outer cylindrical wall and the inner cylindrical wall, and a passage at least partially formed in the liner and isolated from the process volume, the passage being adapted to flow a heat transfer medium therethrough, as recited by independent claim 38.

Thus, independent claim 38, and claim 40 that depends therefrom, are patentable over *Pu* in view of *Masuda*. Accordingly, the Applicants respectfully request that the rejection to claims 38 and 40 be withdrawn.

3. Claims 47, 48 and 55

Claims 47, 48 and 55 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda*. The Applicants respectfully disagree.

Pu and *Masuda* do not, individually or in combination, teach, show or suggest all of the limitations of independent claim 47, from which claim 48 depends. As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest, a chamber liner having at least a first portion having a base substantially covering the bottom of a chamber body and an outer wall disposed proximate the wall of the chamber body, the chamber liner having a passage fluidly isolated from the chamber volume at least partially formed in the chamber liner and adapted to circulate a heat transfer medium therethrough, as recited by independent claim 47.

Thus, independent claim 47, and claims 48 and 55 that depends therefrom, are patentable over *Pu* in view of *Masuda*. Accordingly, the Applicants respectfully request that the rejection to claims 47, 48 and 55 be withdrawn.

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4. Claim 51

Claim 51 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda*. The Applicants respectfully disagree.

Pu and *Masuda* do not, individually or in combination, teach, show or suggest all of the limitations of independent claim 51. As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest, a chamber liner disposed against a vertical portion of a substrate support, the chamber liner having a passage fluidly isolated from the chamber volume at least partially formed in the chamber liner, as recited by independent claim 51.

Thus, independent claim 51 is patentable over *Pu* in view of *Masuda*. Accordingly, the Applicants respectfully request that the rejection to claim 51 be withdrawn.

5. Claim 53

Claim 53 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda*. The Applicants respectfully disagree.

Pu and *Masuda* do not, individually or in combination, teach, show or suggest all of the limitations of independent claim 53. As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest, a chamber liner including an outer cylindrical wall configured to line the wall of a chamber, an inner cylindrical wall configured to line a substrate support, a bottom connecting the outer cylindrical wall and the inner cylindrical wall, and at least one passage disposed in at least one of the bottom or walls of the liner, the passage being fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a heat transfer medium therethrough, as recited by independent claim 53.

Thus, independent claim 53 is patentable over *Pu* in view of *Masuda*. Accordingly, the Applicants respectfully request that the rejection to claim 53 be withdrawn.

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C. 35 U.S.C. §103(a)

Claim 18

Pu in view of *Masuda* and further in view of *Reimold et al.*

Claim 18 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda* and further in view of German Patent No. DE 31 10489, published October 20, 1982 to *Reimold* (hereinafter referred to as "*Reimold*"). The Applicants respectfully disagree.

Reimold teaches a heat exchanger comprising a jacket tube that supports a housing ring on each end. Each housing ring has on its circumference a number of bosses for providing a connection for the supply or removal of a heat exchanging medium. One of the bosses is further adapted to engage a connecting bore. *Pu* and *Masuda*, as discussed, do not teach the use of a mechanical heat exchanger *per se* in a processing chamber. Rather, *Masuda* teaches a simple hollow space formed in a jacket placed adjacent to a wall of a chamber for filling with a heat exchanging. As the heating exchanging fluid is provided by a simple inlet pipe and is confined to the hollow space, and because there does not appear to be an outlet or means for evacuating the fluid from the hollow space, there is little need for a heat exchanger such as that described by *Reimold*, in which a plurality of bosses are provided for establishing a plurality of connection to other components. Therefore, the heat exchanger taught by *Reimold* would not necessarily provide any benefit to or enhancement of the advantages sought by the teachings of *Pu* and *Masuda*.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 11, from which claim 18 depends. Furthermore, there is no suggestion or motivation to adapt the teachings of *Pu* and *Masuda* with those of *Reimold* to teach, show or suggest a chamber liner disposed in a chamber volume and having a base substantially covering the bottom of the chamber body, the base having a substantially annular passage formed therein and fluidly isolated from the chamber volume, the base having an inlet and an outlet adapted to circulate a fluid through the passage, and a first and second boss projecting from the base, the first boss comprising a hole in fluid

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communication with the inlet, and the second boss comprising a hole in fluid communication with the outlet, as recited by claim 18.

Thus, independent claim 18 is patentable over *Pu* in view of *Masuda* and further in view of *Reimold*. Accordingly, the Applicants respectfully request that the rejection to claim 18 be withdrawn.

D. 35 U.S.C. §103(a)

Claims 19, 54 and 56-58

Pu in view of *Masuda* and further in view of *Collins et al.*

1. Claim 19

Claim 19 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda* and further in view of PCT Patent Application No. WO 97/08734, published March 6, 1997 to *Collins et al.* (hereinafter referred to as "*Collins I*"). The Applicants respectfully disagree.

Collins I teaches a plasma processing chamber having an interior volume within which a pedestal is disposed. An annular passage is formed around the circumference of the pedestal and is connected to a pumping annulus that is adapted to evacuate the chamber. A pair of magnets is disposed within the walls of the chamber, and not within an inner liner, on opposite sides of the annular passage. The magnets are adapted to confine the plasma to prevent plasma flow from escaping the chamber and entering the pumping annulus. Thus, whereas *Pu* and *Masuda* are concerned with reducing the amount of deposition on the walls and/or pedestal of the chamber, *Collins I* is concerned with preventing plasma from traveling to certain portions of the chamber (*i.e.*, prevent plasma from escaping the chamber or depositing on ports to the chamber exterior). Therefore, the magnets taught by *Collins I* would have to be utilized (*e.g.*, positioned) in a manner that would be proximate to the exhaust port in a liner of *Pu* or *Masuda* to prevent plasma from passing through a port in the liner. As the inner wall of the present invention does not contain a port, there is no motivation to provide a magnet on the inner wall of the liner as recited by claim 19.

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Moreover, as discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 11, from which claim 19 depends. Furthermore, there is no suggestion or motivation to adapt the teachings of *Pu* and *Masuda* with those of *Collins I* to teach, show or suggest a chamber liner disposed in a chamber volume and having a base substantially covering the bottom of the chamber body, the base having a substantially annular passage formed therein and fluidly isolated from the chamber volume, the base having an inlet and an outlet adapted to circulate a fluid through the passage, and a magnet disposed in the inner wall (of the liner), as recited by claim 19.

Thus, claim 19 is patentable over *Pu* in view of *Masuda* and further in view of *Collins I*. Accordingly, the Applicants respectfully request that the rejection to claim 18 be withdrawn.

2. Claim 54

Claim 54 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda* and further in view of *Collins I*. The Applicants respectfully disagree.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 38, from which claim 54 depends. Furthermore, as discussed, there is no suggestion or motivation to adapt the teachings of *Pu* and *Masuda* with those of *Collins I* to teach, show or suggest a liner including an outer cylindrical wall configured to line the sidewalls of the chamber, an inner cylindrical wall configured to line a substrate support disposed in the process volume of the chamber, a bottom coupled between the outer cylindrical wall and the inner cylindrical wall, and a passage at least partially formed in the liner and isolated from the process volume, the passage being adapted to flow a heat transfer medium therethrough, and a magnet disposed in the inner wall (of the liner), as recited by claim 54.

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Thus, claim 54 is patentable over *Pu* in view of *Masuda* and further in view of *Collins I*. Accordingly, the Applicants respectfully request that the rejection to claim 54 be withdrawn.

3. Claim 56

Claim 56 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda* and further in view of *Collins I*. The Applicants respectfully disagree.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 47, from which claim 56 indirectly depends. Furthermore, as discussed, there is no suggestion or motivation to adapt the teachings of *Pu* and *Masuda* with those of *Collins I* to teach, show or suggest a chamber liner having at least a first portion having a base substantially covering the bottom of a chamber body and an outer wall disposed proximate the wall of the chamber body, the chamber liner having a passage fluidly isolated from the chamber volume at least partially formed in the chamber liner and adapted to circulate a heat transfer medium therethrough, an inner wall extending from the base inward of the outer wall, and a magnet disposed in the inner wall (of the liner), as recited by claim 56.

Thus, claim 56 is patentable over *Pu* in view of *Masuda* and further in view of *Collins I*. Accordingly, the Applicants respectfully request that the rejection to claim 56 be withdrawn.

4. Claim 57

Claim 57 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda* and further in view of *Collins I*. The Applicants respectfully disagree.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 51, from which claim 57 depends. Furthermore,

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as discussed, there is no suggestion or motivation to adapt the teachings of *Pu* and *Masuda* with those of *Collins I* to teach, show or suggest a chamber liner disposed against a vertical portion of a substrate support, the chamber liner having a passage fluidly isolated from the chamber volume at least partially formed in the chamber liner, and a magnet disposed in the liner, as recited by claim 57.

Thus, claim 57 is patentable over *Pu* in view of *Masuda* and further in view of *Collins I*. Accordingly, the Applicants respectfully request that the rejection to claim 57 be withdrawn.

5. **Claim 58**

Claim 58 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda* and further in view of *Collins I*. The Applicants respectfully disagree.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 53, from which claim 58 depends. Furthermore, as discussed, there is no suggestion or motivation to adapt the teachings of *Pu* and *Masuda* with those of *Collins I* to teach, show or suggest a chamber liner including an outer cylindrical wall configured to line the wall of a chamber, an inner cylindrical wall configured to line a substrate support, a bottom connecting the outer cylindrical wall and the inner cylindrical wall, and at least one passage disposed in at least one of the bottom or walls of the liner, the passage being fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a heat transfer medium therethrough, and a magnet disposed in the inner cylindrical wall (of the liner), as recited by claim 58.

Thus, claim 58 is patentable over *Pu* in view of *Masuda* and further in view of *Collins I*. Accordingly, the Applicants respectfully request that the rejection to claim 58 be withdrawn.

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E. 35 U.S.C. §103(a)

Claims 21-24 and 49-50

Pu in view of *Masuda* and further in view of *Shan et al.*

1. Claims 21-24

Claims 21-24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda* and further in view of European Patent Application No. EP 0 814 495, published December 29, 1997 to *Shan et al.* (hereinafter referred to as "*Shan*"). The Applicants respectfully disagree.

Shan actually discloses the pair of liners taught by *Pu*, which incorporates the United States Patent (No. 5,892,530) that is based on the *Shan* European Patent. *Shan* teaches a plasma processing chamber having a pair of shields that prevent film from depositing on the walls of the chamber. A generally cylindrical dielectric anode shield lines the sidewalls of a chamber from lid to bottom and further comprises an annular lip at an upper end that projects radially outward to rest upon the upper edge of the chamber wall and support the weight of the anode shield. The lip also protrudes partially radially inward to create a rim or aperture having a diameter at least large enough to accommodate a gas distribution plate (*i.e.*, the anode shield does not line the chamber lid). A dielectric cathode shield is spaced radially inward from the anode shield and extends from a cathode (*e.g.*, a substrate support) to a chamber bottom.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 11, from which claims 21-24 depends. Furthermore, there is no suggestion or motivation to adapt the teachings of *Pu* and *Masuda* with those of *Shan* to teach, show or suggest a chamber liner disposed in a chamber volume and having a base substantially covering the bottom of the chamber body, the base having a substantially annular passage formed therein and fluidly isolated from the chamber volume, the base having an inlet and an outlet adapted to circulate a fluid through the passage, wherein the chamber liner further comprises an inner wall connected to an inner edge of the base, and outer wall connected to an outer edge of the base and extending

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upwards against the wall of the chamber body, as recited by claim 21. Nor do the references teach, show or suggest the additional limitations of a lid disposed opposite the base, the lid and the outer wall defining a plenum at least partially therebetween, a plurality of nozzles disposed in the base providing fluid access to the plenum, or a gas feedthrough fluidly coupled to the plenum through a hole disposed in the lid, as recited by claims 22, 23 and 24, respectively.

Thus, claims 21-24 are patentable over *Pu* in view of *Masuda* and further in view of *Shan*. Accordingly, the Applicants respectfully request that the rejection to claims 21-24 be withdrawn.

2. Claims 49-50

Claims 49-50 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda* and further in view of *Shan*. The Applicants respectfully disagree.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 47, from which claims 49-50 depend. Furthermore, there is no suggestion or motivation to adapt the teachings of *Pu* and *Masuda* with those of *Shan* to teach, show or suggest suggest a chamber liner having at least a first portion having a base substantially covering the bottom of a chamber body and an outer wall disposed proximate the wall of the chamber body, the chamber liner having a passage fluidly isolated from the chamber volume at least partially formed in the chamber liner and adapted to circulate a heat transfer medium therethrough, an inner wall extending from the base inward of the outer wall, a second portion wall extending downward along the wall of the chamber body to the outer wall of the first portion of the liner, a cover closing one end of the second portion wall, and a plurality of apertures formed through the cover of the second portion of the chamber liner, as recited by claim 21. Nor do the references teach, show or suggest the additional limitation of a plate disposed on the chamber liner and forming a plenum

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therewith, the plenum in fluid communication with the chamber volume through the apertures, as recited by claim 50.

Thus, claims 49-50 are patentable over *Pu* in view of *Masuda* and further in view of *Shan*. Accordingly, the Applicants respectfully request that the rejection to claims 49-50 be withdrawn.

F. 35 U.S.C. §103(a)

Claim 42

Pu* in view of *Masuda* and further in view of *Collins et al.

Claim 42 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Pu* in view of *Masuda* and further in view of PCT Application WO 97/08734, published March 6, 1997 to *Collins et al.* (hereinafter referred to as "*Collins II*"). The Applicants respectfully disagree.

Collins II teaches an optional liner for covering the surfaces of a pumping annulus in a processing chamber, to prevent polymers from accumulating on the pumping annulus. The liner is thermally coupled to a cold sink for regulating, from the exterior, the temperature of the liner and for controlling polymer materials that are attracted to the pumping annulus. *Collins II* does not teach, show or suggest that substantial portions of the chamber body (e.g., chamber walls, substrate supports) may be lined, nor does it teach, show or suggest channels formed in the liner for circulating a fluid to control the temperature of the liner from within.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Pu* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 38, from which claim 42 depends. Furthermore, as discussed, there is no suggestion or motivation to adapt the teachings of *Pu* and *Masuda* with those of *Collins II* to teach, show or suggest a liner including an outer cylindrical wall configured to line the sidewalls of the chamber, an inner cylindrical wall configured to line a substrate support disposed in the process volume of the chamber, a bottom coupled between the outer cylindrical wall and the inner cylindrical wall, and a passage at least partially

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formed in the liner and isolated from the process volume, the passage being adapted to flow a heat transfer medium therethrough and formed at least partially in the bottom, as recited by claim 42.

Thus, claim 42 is patentable over *Pu* in view of *Masuda* and further in view of *Collins II*. Accordingly, the Applicants respectfully request that the rejection to claim 42 be withdrawn.

G. 35 U.S.C. §103(a) Claims 11-17, 20-24, 38, 40, 47-51, 53 and 55
Shan* in view of *Masuda

1. Claims 11-17 and 20

Claims 11-17 and 20-24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda*. The Applicants respectfully disagree.

Shan and *Masuda* do not, individually or in combination, teach, show or suggest all of the limitations of independent claim 11, from which claims 12-17 and 20-24 depend. As discussed above, *Shan* teaches the structure referenced by Figure 1 of *Pu* and teaches preventing deposition on a chamber wall and on the sides of a substrate support by covering the surfaces with respective liners. Also as discussed, the jacket taught by *Masuda* is provided a heat exchanging medium by means of a pipe that extends through a sidewall of the chamber from an outside environment. Such a medium supply means is only effective for providing the medium to a jacket disposed against the sidewall. In order to similarly provide the heat exchanging medium to an inner liner wall that is disposed against a substrate support, the pipe would have to extend not only through the sidewall, but through a portion of the processing volume. Thus, the pipe could interfere with other chamber components and would be subjected to plasma and other processing materials that may corrode the pipe, leading to wear and/or failure of the liner system. *Masuda* therefore does not provide any practicable benefit to the teachings of *Shan*.

Thus, while *Shan* teaches a pair of removable liners that simply cover portions of a processing chamber to prevent deposition of reaction products on

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those portions, *Masuda* teaches a jacket adapted to be disposed adjacent a chamber wall for regulating the temperature of the wall. There is no suggestion or motivation to combine *Shan* and *Masuda* in a manner that would teach, show or suggest a chamber liner disposed in a chamber volume and having a base substantially covering the bottom of the chamber body, the base having a substantially annular passage formed therein and fluidly isolated from the chamber volume, the base having an inlet and an outlet adapted to circulate a fluid through the passage, as recited by claim 11.

Thus, independent claim 11, and claims 12-17 and 20-24 that depend therefrom, are patentable over *Shan* in view of *Masuda*. Accordingly, the Applicants respectfully request that the rejection to claims 11-17 and 20-24 be withdrawn.

2. Claims 38 and 40

Claims 38 and 40 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda*. The Applicants respectfully disagree.

Shan and *Masuda* do not, individually or in combination, teach, show or suggest all of the limitations of independent claim 38, from which claim 40 depends. As discussed above, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest, a liner including an outer cylindrical wall configured to line the sidewalls of the chamber, an inner cylindrical wall configured to line a substrate support disposed in the process volume of the chamber, a bottom coupled between the outer cylindrical wall and the inner cylindrical wall, and a passage at least partially formed in the liner and isolated from the process volume, the passage being adapted to flow a heat transfer medium therethrough, as recited by independent claim 38.

Thus, independent claim 38, and claim 40 that depends therefrom, are patentable over *Shan* in view of *Masuda*. Accordingly, the Applicants respectfully request that the rejection to claims 38 and 40 be withdrawn.

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3. Claims 47, 48 and 55

Claims 47, 48 and 55 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda*. The Applicants respectfully disagree.

Shan and *Masuda* do not, individually or in combination, teach, show or suggest all of the limitations of independent claim 47, from which claim 48 depends. As discussed above, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest, a chamber liner having at least a first portion having a base substantially covering the bottom of a chamber body and an outer wall disposed proximate the wall of the chamber body, the chamber liner having a passage fluidly isolated from the chamber volume at least partially formed in the chamber liner and adapted to circulate a heat transfer medium therethrough, as recited by independent claim 47.

Thus, independent claim 47, and claims 48 and 55 that depends therefrom, are patentable over *Pu* in view of *Masuda*. Accordingly, the Applicants respectfully request that the rejection to claims 47, 48 and 55 be withdrawn.

4. Claim 51

Claim 51 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda*. The Applicants respectfully disagree.

Shan and *Masuda* do not, individually or in combination, teach, show or suggest all of the limitations of independent claim 51. As discussed above, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest, a chamber liner disposed against a vertical portion of a substrate support, the chamber liner having a passage fluidly isolated from the chamber volume at least partially formed in the chamber liner, as recited by independent claim 51.

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Thus, independent claim 51 is patentable over *Shan* in view of *Masuda*. Accordingly, the Applicants respectfully request that the rejection to claim 51 be withdrawn.

5. Claim 53

Claim 53 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda*. The Applicants respectfully disagree.

Shan and *Masuda* do not, individually or in combination, teach, show or suggest all of the limitations of independent claim 53. As discussed above, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest, a chamber liner including an outer cylindrical wall configured to line the wall of a chamber, an inner cylindrical wall configured to line a substrate support, a bottom connecting the outer cylindrical wall and the inner cylindrical wall, and at least one passage disposed in at least one of the bottom or walls of the liner, the passage being fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a heat transfer medium therethrough, as recited by independent claim 53.

Thus, independent claim 53 is patentable over *Shan* in view of *Masuda*. Accordingly, the Applicants respectfully request that the rejection to claim 53 be withdrawn.

H. 35 U.S.C. §103(a)

Claim 18

Shan in view of *Masuda* and further in view of *Reimold et al.*

Claim 18 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda* and further in view of *Reimold*. The Applicants respectfully disagree.

As discussed above, the heat exchanger taught by *Reimold* would not necessarily provide any benefit to or enhancement of the advantages sought by the teachings of *Shan* and *Masuda*. Thus, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 11, from which claim 18 depends.

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Furthermore, there is no suggestion or motivation to adapt the teachings of *Shan* and *Masuda* with those of *Reimold* to teach, show or suggest a chamber liner disposed in a chamber volume and having a base substantially covering the bottom of the chamber body, the base having a substantially annular passage formed therein and fluidly isolated from the chamber volume, the base having an inlet and an outlet adapted to circulate a fluid through the passage, and a first and second boss projecting from the base, the first boss comprising a hole in fluid communication with the inlet, and the second boss comprising a hole in fluid communication with the outlet, as recited by claim 18.

Thus, independent claim 18 is patentable over *Shan* in view of *Masuda* and further in view of *Reimold*. Accordingly, the Applicants respectfully request that the rejection to claim 18 be withdrawn.

I. 35 U.S.C. §103(a)

Claims 19, 54 and 56-58

Shan in view of *Masuda* and further in view of *Collins et al.*

1. Claim 19

Claim 19 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda* and further in view of *Collins I*. The Applicants respectfully disagree.

As discussed above, the magnets taught by *Collins I* would not necessarily provide any benefit to or enhancement of the advantages sought by, the teachings of *Shan* and *Masuda*. Therefore, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 11, from which claim 19 depends. Furthermore, there is no suggestion or motivation to adapt the teachings of *Shan* and *Masuda* with those of *Collins I* to teach, show or suggest a chamber liner disposed in a chamber volume and having a base substantially covering the bottom of the chamber body, the base having a substantially annular passage formed therein and fluidly isolated from the chamber volume, the base having an inlet and an outlet adapted to circulate a fluid through the

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passage, and a magnet disposed in the inner wall (of the liner), as recited by claim 19.

Thus, claim 19 is patentable over *Shan* in view of *Masuda* and further in view of *Collins I*. Accordingly, the Applicants respectfully request that the rejection to claim 18 be withdrawn.

2. Claim 54

Claim 54 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda* and further in view of *Collins I*. The Applicants respectfully disagree.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 38, from which claim 54 depends. Furthermore, as discussed, there is no suggestion or motivation to adapt the teachings of *Shan* and *Masuda* with those of *Collins I* to teach, show or suggest a liner including an outer cylindrical wall configured to line the sidewalls of the chamber, an inner cylindrical wall configured to line a substrate support disposed in the process volume of the chamber, a bottom coupled between the outer cylindrical wall and the inner cylindrical wall, and a passage at least partially formed in the liner and isolated from the process volume, the passage being adapted to flow a heat transfer medium therethrough, and a magnet disposed in the inner wall (of the liner), as recited by claim 54.

Thus, claim 54 is patentable over *Shan* in view of *Masuda* and further in view of *Collins I*. Accordingly, the Applicants respectfully request that the rejection to claim 54 be withdrawn.

3. Claim 56

Claim 56 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda* and further in view of *Collins I*. The Applicants respectfully disagree.

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As discussed above, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 47, from which claim 56 indirectly depends. Furthermore, as discussed, there is no suggestion or motivation to adapt the teachings of *Shan* and *Masuda* with those of *Collins I* to teach, show or suggest a chamber liner having at least a first portion having a base substantially covering the bottom of a chamber body and an outer wall disposed proximate the wall of the chamber body, the chamber liner having a passage fluidly isolated from the chamber volume at least partially formed in the chamber liner and adapted to circulate a heat transfer medium therethrough, an inner wall extending from the base inward of the outer wall, and a magnet disposed in the inner wall (of the liner), as recited by claim 56.

Thus, claim 56 is patentable over *Shan* in view of *Masuda* and further in view of *Collins I*. Accordingly, the Applicants respectfully request that the rejection to claim 56 be withdrawn.

4. Claim 57

Claim 57 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda* and further in view of *Collins I*. The Applicants respectfully disagree.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 51, from which claim 57 depends. Furthermore, as discussed, there is no suggestion or motivation to adapt the teachings of *Shan* and *Masuda* with those of *Collins I* to teach, show or suggest a chamber liner disposed against a vertical portion of a substrate support, the chamber liner having a passage fluidly isolated from the chamber volume at least partially formed in the chamber liner, and a magnet disposed in the liner, as recited by claim 57.

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Thus, claim 57 is patentable over *Shan* in view of *Masuda* and further in view of *Collins I*. Accordingly, the Applicants respectfully request that the rejection to claim 57 be withdrawn.

5. Claim 58

Claim 58 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda* and further in view of *Collins I*. The Applicants respectfully disagree.

As discussed above, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 53, from which claim 58 depends. Furthermore, as discussed, there is no suggestion or motivation to adapt the teachings of *Shan* and *Masuda* with those of *Collins I* to teach, show or suggest a chamber liner including an outer cylindrical wall configured to line the wall of a chamber, an inner cylindrical wall configured to line a substrate support, a bottom connecting the outer cylindrical wall and the inner cylindrical wall, and at least one passage disposed in at least one of the bottom or walls of the liner, the passage being fluidly isolated from the chamber volume and having an inlet and an outlet adapted to circulate a heat transfer medium therethrough, and a magnet disposed in the inner cylindrical wall (of the liner), as recited by claim 58.

Thus, claim 58 is patentable over *Shan* in view of *Masuda* and further in view of *Collins I*. Accordingly, the Applicants respectfully request that the rejection to claim 58 be withdrawn.

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J. 35 U.S.C. §103(a)

Claims 26 and 28

Shan in view of *Masuda* and further in view of *Zhao et al.*

Claims 26 and 28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda* and further in view of European Patent Application No. EP 0 814 495, published July 29, 1998 to *Zhao et al.* (hereinafter referred to as "Zhao"). The Applicants respectfully disagree.

As discussed above, *Shan* teaches a plasma processing chamber having two dielectric shields or liners, a first being disposed adjacent a chamber side wall and a second being disposed radially inward of the first, adjacent a cathode or substrate support. *Shan* does not teach, as the Examiner suggests, a liner having a plurality of apertures formed at least partially therein; rather, *Shan* teaches that one aperture or slit is formed through the chamber side wall and adjacent liner to create a transfer port for a substrate. *Zhao* teaches a chemical vapor deposition chamber having a substrate pedestal, two liners, and a showerhead that has a plurality of nozzles for distributing a flow of processing gas over a substrate positioned on the pedestal. There is no suggestion or motivation to adapt the one aperture of *Shan* to incorporate the nozzles of *Zhao*, as the aperture of *Shan* is for substrate transfer and thus must remain substantially unobstructed and open to allow a substrate to pass therethrough. Furthermore, it simply makes no sense to incorporate nozzles, as they are not necessary to achieve substrate transfer, and in fact would probably impede it.

Thus, there is no motivation or suggestion to combine *Shan* and *Zhao* in a manner that would teach, show or suggest a liner disposed proximate a chamber lid, the liner having a first portion having a base substantially covering a bottom of a chamber body and an outer wall disposed proximate a wall of the chamber body, a second portion disposed proximate a lid of the chamber body and having a second portion wall extending downward along the wall of the chamber body to the outer wall of the first portion of the liner, a plurality of apertures formed in the second portion of the liner, a plenum at least partially defined between the lid and the second portion of the liner, and a nozzle

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disposed in at least one of the apertures for flowing fluid from the plenum through the second portion of the liner, as recited by independent claim 26. Nor do the references teach, show or suggest the additional limitation of a channel having an inlet and outlet disposed in the liner, as recited by claim 28.

Thus, claim 26, and claim 28 that depends therefrom, are patentable over *Shan* in view of *Zhao*. Accordingly, the Applicants respectfully request that the rejection to claims 26 and 28 be withdrawn.

K. 35 U.S.C. §103(a)

Claim 27

Shan* in view of *Zhao* and further in view of *Takeuchi et al.

Claim 27 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Zhao*, and further in view of United States Patent No. 5,824,158, issued October 20, 1998 to *Takeuchi et al.* (hereinafter referred to as "*Takeuchi*"). The Applicants respectfully disagree.

Takeuchi teaches a plasma processing system in which a gas inlet nozzle comprised of quartz extends through a chamber side wall. As discussed above, there is no suggestion or motivation to adapt the one aperture of *Shan* to incorporate the nozzles of *Zhao*, regardless of the material of which the nozzles are comprised. Thus, there is no suggestion or motivation to combine *Shan*, *Zhao* and *Takeuchi* in a manner that would teach, show or suggest a liner disposed proximate a chamber lid, the liner having a first portion having a base substantially covering a bottom of a chamber body and an outer wall disposed proximate a wall of the chamber body, a second portion disposed proximate a lid of the chamber body and having a second portion wall extending downward along the wall of the chamber body to the outer wall of the first portion of the liner, a plurality of apertures formed in the second portion of the liner, a plenum at least partially defined between the lid and the second portion of the liner, and a nozzle disposed in at least one of the apertures for flowing fluid from the plenum through the second portion of the liner, wherein the nozzle is comprised of

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quartz, silicon carbide, silicon, aluminum nitride, aluminum oxide or combinations thereof, as recited by claim 27.

Thus claim 27 is patentable over *Shan* in view of *Zhao* and further in view of *Takeuchi*. Accordingly, the Applicants respectfully request that the rejection to claim 27 be withdrawn.

L. 35 U.S.C. §103(a)

Claim 37

Shan in view of *Zhao* and further in view of *Banholzer et al.*

Claim 37 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Zhao*, and further in view of United States Patent No. 5,565,058, issued October 15, 1996 to *Banholzer et al.* (hereinafter referred to as "*Banholzer*"). The Applicants respectfully disagree.

Banholzer teaches a vacuum chamber in which shield positioned with the chamber is treated to roughen its surface to increase the adhesion of deposited materials. As discussed above, there is no suggestion or motivation to adapt the one aperture of *Shan* to incorporate the nozzles of *Zhao*, regardless of the texture of the chamber liner. Thus, there is no suggestion or motivation to combine *Shan*, *Zhao* and *Takeuchi* in a manner that would teach, show or suggest a liner disposed proximate a chamber lid, the liner having a first portion having a base substantially covering a bottom of a chamber body and an outer wall disposed proximate a wall of the chamber body, a second portion disposed proximate a lid of the chamber body and having a second portion wall extending downward along the wall of the chamber body to the outer wall of the first portion of the liner, a plurality of apertures formed in the second portion of the liner, a plenum at least partially defined between the lid and the second portion of the liner, and a nozzle disposed in at least one of the apertures for flowing fluid from the plenum through the second portion of the liner, wherein a second side of the liner is textured as recited by claim 37.

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Thus claim 37 is patentable over *Shan* in view of *Zhao* and further in view of *Banholzer*. Accordingly, the Applicants respectfully request that the rejection to claim 37 be withdrawn.

M. 35 U.S.C. §103(a)

Claim 42

Shan in view of *Masuda* and further in view of *Collins II*

Claim 42 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda* and further in view of *Collins II*. The Applicants respectfully disagree.

As discussed above, *Collins II* teaches an optional liner for covering the surfaces of a pumping annulus in a processing chamber, the liner being thermally coupled to a cold sink for regulating, from the exterior, the temperature of the liner and for controlling polymer materials that are attracted to the pumping annulus. *Collins II* does not teach, show or suggest that substantial portions of the chamber body (e.g., chamber walls, substrate supports) may be lined, nor does it teach, show or suggest channels formed in the liner for circulating a fluid to control the temperature of the liner from within.

Also as discussed, there is no suggestion or motivation to adapt the teachings of *Shan* with those of *Masuda* to teach, show or suggest all of the limitations of independent claim 38, from which claim 42 depends. Furthermore, there is no suggestion or motivation to adapt the teachings of *Shan* and *Masuda* with those of *Collins II* to teach, show or suggest a liner including an outer cylindrical wall configured to line the sidewalls of the chamber, an inner cylindrical wall configured to line a substrate support disposed in the process volume of the chamber, a bottom coupled between the outer cylindrical wall and the inner cylindrical wall, and a passage at least partially formed in the liner and isolated from the process volume, the passage being adapted to flow a heat transfer medium therethrough and formed at least partially in the bottom, as recited by claim 42.

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Thus, claim 42 is patentable over *Shan* in view of *Masuda* and further in view of *Collins II*. Accordingly, the Applicants respectfully request that the rejection to claim 42 be withdrawn.

N. 35 U.S.C. §103(a)

Claim 52

Shan* in view of *Masuda* and further in view of *Zhao

Claim 52 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan* in view of *Masuda* and further in view of *Zhao*. The Applicants respectfully disagree.

As discussed above, there is no suggestion or motivation to adapt the one aperture of *Shan* to incorporate the nozzles of *Zhao*. Furthermore, there is no suggestion or motivation to adapt the teachings of *Shan* and *Masuda* with those of *Zhao* in a manner that would teach, show or suggest a liner for lining a chamber volume of a semiconductor processing chamber, including a cylindrical wall having an upper end closed by a top member, the cylindrical wall adapted to line a portion of the chamber volume, a plurality of apertures in the top member, a passage formed in the top member and fluidly isolated from the chamber volume, and a nozzle disposed in at least one of the apertures, as recited by claim 52.

Thus, claim 52 is patentable over *Shan* in view of *Masuda* and further in view of *Zhao*. Accordingly, the Applicants respectfully request that the rejection to claim 52 be withdrawn.

RESPONSE TO ARGUMENTS

The Applicants thank the Examiner for his comments regarding the arguments in the communication filed August 22, 2003, and for the withdrawal of several rejections under 35 U.S.C. §102 and 103.

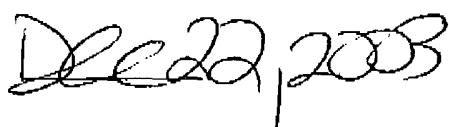
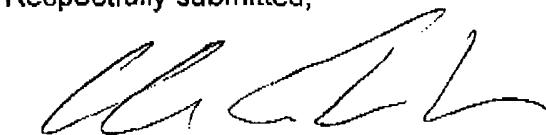
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CONCLUSION

The Applicants submit that all claims now pending are in condition for allowance. Accordingly, both reconsideration of this application and swift passage to issue are earnestly solicited.

If the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Keith Taboada at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

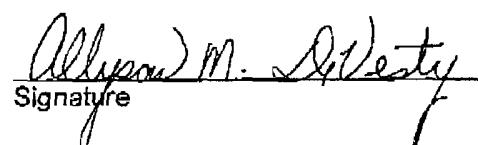
 

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Signature

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Printed Name of Person Signing

12-22-03
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